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10/734,566	12/12/2003	Reinhard Lihl	LVIP:108US	1877

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EXAMINER
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PETERSON, KENNETH E

ART UNIT	PAPER NUMBER
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3724

DATE MAILED: 10/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/734,566

Applicant(s)

LIHL ET AL.

Examiner

Kenneth E. Peterson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-7 and 9-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-7 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

1. Examiner notes that the amendment received 28 Sep 06 does not accurately reflect the changes to the claims. For example, in claims 2-5 and 7, there was no need to remove the reference to claim 1, since that was already done in the amendment of 29 August 05. Also noted is that new claim 18 is amended. In spite of path taken, the claims will be taken at face value.

2. Newly submitted claims 16-20 are directed to an invention that is independent or distinct from the invention originally elected for the following reasons:

Claims 16,17,19 and 20 have the feature of automatically setting a cutting window.

Claims 18-20 have the feature of taking small steps to separate the knife and specimen.

There is both two-way distinctness and a search burden between these new features and the features of elected and examined claims 2-7. Claim 9 is a linking claim.

For example, the device of claim 2, having the light barrier at the height of the knife blade, could be employed without "automatically setting a cutting window" as in claim 16. Conversely, the device of claim 16, having the step of "automatically setting a cutting window" could be employed with the light barrier being slight above the height of the knife, unlike the device of claim 2.

There is a search burden to search all these groups together, as per MPEP 808.02(C). For example, the search for claim 2 involves looking thru the entire cutting

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art for the positioning of various workpiece sensitive light barriers and limit switches.

The search for claim 16 is not as above, but instead is in the control arts with text searching for cutting windows.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 16-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

3. Claims 2-7 and 9 are objected to because of the following informalities:

On line 1 of claims 2-8, the term "apparatus" should be changed to --ultramicrotome--.

On line 1 of claim 9, "A" should be changed to --An--.

In claims 4, the range-within-a-range "particularly a laser or an LED" should be deleted since it is not being given weight.

Appropriate correction is required.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-7 and 9 are rejected under 35 U.S.C. 103(a).

The patent to Niesporek et al.'654 shows a microtome having most of the recited limitations including a sensing device (20,44) controlling a feeder device (50) at different speeds (coarse speed, slicing speed).

Niesporak determines the position of the sample relative to the blade via a contact sensor (20) rather than a light barrier sensor.

Examiner notes that contact sensors and light barrier sensors are both very old and well known and also are art recognized equivalents. When sensing the position of a workpiece or tool part, one of ordinary skill would know that he has a choice between a contact sensor and a light barrier sensor. Evidence of this can be seen in numerous patents. See, for example, Guttler '970 (lines 23,24, column 6), Hannen et al.'719 (lines 51,52, column 3), Markgraf et al.'848 (lines 29-31, column 8), Naab '392 (lines 15-17, column 10), Kramer et al.'763 (lines 53,54, column 4) and Weinheimer '135 (lines 64,65, column 7). It would have been obvious to one of ordinary skill in the art to have modified Niesporak by making his contact sensor be a light barrier, since these are art recognized equivalents as set forth above, and also since light sensors (having no moving parts) are less likely to break.

If there is any doubt about the efficacy of light barrier sensors within microtomes, Examiner notes that light barrier sensors have long been employed for various purposes with microtomes. Evidence of this can be seen in numerous patents. See, for example, Walter et al.'653 (line 45, column 5), Pfeifer '657 (lines 39,40, column 3), Sitte '234 (lines 1-6, column 6) and Niesporak et al.'654 himself (line 63, column 4). Another important reference is the patent to Jakobi et al.'977, who discloses a light barrier for

positioning the specimen height (lines 49-51, column 7). Examiner notes the difference between setting specimen height, as in Jacobi, and setting the proximity of the specimen to the blade, as in Niesporak and Applicant's device, but this is a very valuable teaching anyway. There is certainly room for the light barrier at the height of the knife as seen in Sitte et al.'224, who has illumination lights in that area. The most important reference is Soderkvist '838, which shows a light barrier in the same location and for the same purpose as Applicant's. Soderkvist's light barrier is perpendicular to the knife edge, and he stops near 1 $\mu$ m instead of the claims "few  $\mu$ m", but the teachings are quite important nonetheless.

Also of interest, and making the modification even more obvious, is a patent to Mohr '886, who shows in figure 6 the use of light barrier to preposition the knife (7) relative to the workpiece (19) prior to initiation of the cutting cycle, and a patent to Nishimoto '776 showing a light barrier (21,22) sensing the location of the specimen (meat) relative to the blade (31) and using that info to control the specimen advancement (lines 24-64, column 5).

With regards to claims 3,5 and 6, Niesporak's sensor is stationary and coupled to the knife holder.

With regards to claim 4, any light barrier emits electromagnetic radiation. Applicant's range-within-a-range limitations of a laser or LED is not considered to further limit the claims. If Applicant would like Examiner to give weight to the laser or LED, Applicant should change the claim the laser or LED outside of a range-within-a-range. Nevertheless, Examiner takes Official Notice that it is well known to employ lasers or

LEDs in light barriers, and It would have been obvious to one of ordinary skill in the art to have used a laser or LED in Niesporak's light barrier.

With regards to claim 7, Niesporak drives the specimen at different speeds (lines 51-54, column 4).

With regards to the new limitation of the device being an ultramicrotome (as opposed to a normal microtome), Examiner notes that the definition of an ultramicrotome is *"a device adapted to produce specimen slices with thicknesses on the order of nanometers"* (see Barrett et al.'075, lines 61-63, column 2). Niesporak's microtome is silent on the thickness of his slices, and therefor it is not necessarily an ultramicrotome. However, as seen in the art of record (Persson '083, Soderkvist '838, Sitte '234, Sitte '443, Sitte '224 and many others), ultramicrotomes operate in largely the same fashion as microtomes do, with a stationary blade and an advancing specimen. The most significant differences are simply matters of scale, moving from micrometers to nanometers. It is clear from looking at these that teachings from microtomes are largely applicable to ultramicrotomes. In particular, the teachings of Niesporak's sensor and drive control, as modified above, are readily adaptable to an ultramicrotome, for the purpose of adding course and fine drive features to speed up the entire process. As defined by Barrett et al.'075 above, ultramicrotomes intrinsically can cut slices under 300 nanometers.

With regards to the new limitations of light barrier-knife spacing being "a few micrometers" (claim 1) and the sensor being at the height of the blade (claim 2), Examiner notes that determining a location for the sensor is within the capabilities of

one of ordinary skill. In order to fulfill the function of Niesporak's modified sensor, one of ordinary skill could find numerous places to place the light sensor, including at the height of the knife and at "a few micrometers" spacing. See In re Japikse, 86 USPQ 70 for a discussion on the obviousness of shifting parts locations.

6. Claims 2-7 and 9 are rejected under 35 U.S.C. 103(a).

Soderkvist shows an ultramicrotome with most of the recited limitations including a knife (1), a knife holder (8,10), a specimen holder (15), a linear feed device (lines 11-15, column 3) and a light barrier with a transmitter (3) and a receiver (9).

Since Soderkvist is an ultramicrotome, by definition it cuts slices thinner than 300 nanometers (see Barrett et al.'075, lines 61-63, column 2).

In regards to claim 2, the light barrier crosses the height of the knife as seen in figure 1.

With regards to claims 3 and 5, Soderkvist's sensor is coupled to the knife holder.

With regards to claims 9 and 6, Soderkvist's light barrier extends perpendicular to the knife edge, as opposed to being parallel to the knife edge (claim 9) and stationary (claim 6). Soderkvist's light barrier is a rather complex system, involving mirrors, reflections and transmitter adjustments. Examiner notes that it is much more common to employ a simple light barrier system, such as that seen in Jakobi '977 (lines 48-50, column 7), Nishimoto '776 (21,22) or Mohr '886 (figure 6, parallel to knife edge). It would have been obvious to one of ordinary skill in the art to have modified Soderkvist



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by employing the simpler stationary light barrier, as shown by Jakobi, Nishimoto and Mohr, since these are art recognized equivalents known for the same purpose, and to have made it parallel to the knife edge, as seen in Mohr, in order to most accurately gauge the distance-to-contact.

With regards to claim 9, Soderkvist stops feeding at about  $1\mu\text{m}$  instead of the claimed "few  $\mu\text{m}$ ". This is a known results-effective variable. One could make it smaller, to save feeding time, or one could making it larger, to decrease the chance of the knife being broken. It would have been obvious to one of ordinary skill in the art to have chosen any number of spacings, including a "few  $\mu\text{m}$ ", dependent upon his desire for speed, his safety requirements and his slice thickness settings.

With regards to claim 9, if it is perceived that Soderkvist's feed is not "linear", then Examiner notes that this is ubiquitous in the art. See, for example, Niesporak et al.'654, Jakobi et al.'977 and many more of record. It would have been obvious to one of ordinary skill in the art to have made Soderkvist's feed linear, if it isn't already, since this is the predominate way of doing it in the art.

With regards to claim 4, any light barrier emits electromagnetic radiation. Applicant's range-within-a-range limitations of a laser or LED is not considered to further limit the claims. If Applicant would like Examiner to give weight to the laser or LED, Applicant should change the claim the laser or LED outside of a range-within-a-range. Nevertheless, Examiner takes Official Notice that it is well known to employ lasers or LEDs in light barriers, and It would have been obvious to one of ordinary skill in the art to have used a laser or LED in Soderkvist's light barrier.

With regards to claim 7, Soderkvist drives the specimen at different speeds (note the coarse feed of lines 3-11, column 3 and the fine feed of lines 13-15 of column 3). If there is any doubt that Soderkvist discloses different feed speeds, then Examiner notes that this is well known as seen in Niesporak '654 (abstract). It would have been obvious to one of ordinary skill in the art to have provided Soderkvist with a coarse feed speed and a different slicing speed, as taught by Niesporak, in order to decrease the time spent not cutting.

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth E. Peterson whose telephone number is 571-272-4512. The examiner can normally be reached on Mon-Thur, 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on 571-272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

kp



KENNETH E. PETERSON  
PRIMARY EXAMINER